

DETECTION AND DECONTAMINATION SUBGROUP

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Detection and Decontamination SubGroup Responsibilities

- Lead the development of functional requirements for CBRNE Detection and Decontamination equipment
- Identify existing Detection and Decontamination standards applicable to the development of CBRNE standards



Detection Priorities

- Chemical
- Biological
- Radiological/Nuclear
- Explosives



Chemical Detection User Requirements

- Ability to identify both known and unknown chemicals
- Low occurrences of false positives
- Ability to detect remotely down range
- Sample Matrix: Solid/Vapor/Liquid/Dilute
- Affordable
- Small/Portable
- Large detection level range
- User friendly, simple and quick to use
- Uses commonly available power source



Biological Detection User Requirements

- Currently available technologies, including immunoassay, infrared, particle counters, and mass spectroscopy that are unusable by the first responder
 - Less expensive
 - Portable
 - User friendly
 - Easily operated
 - Easily maintained



Biological Detection User Requirements

- Handheld biological system capable of detecting low concentration levels of contamination.
- The ability to use at least two different technologies at a scene to lessen the chance for either a false positive or a false negative.



Biological Detection User Requirements

- Protocols and procedures understood by Public Health, CDC and the emergency response community which allow for both accurate identification of the suspect material by the health community, as well as timely information for the responder to provide to the victims and responders on the scene



Radiological Detection User Requirements

- 1st Alarm Responders Alerting Devices, which are
 - Rugged
 - Capable of operating in extreme environmental conditions
- High Decibel Audio Alarms
- Use of current audio alarms and vibrating alarms not adequate
- Quick response time
- Low level of detection for alpha, beta and gamma



Radiological Detection User Requirements

- Limited interference from humidity, water, hot and cold environments
- Ease of use
- Output read in multiple units, i.e. CPM, R, MR
- Affordable
- Low power requirements
- Easily maintained and calibrated



Explosive Detection User Requirements

- Physical Security Operations
 - Screening capability that is non-intrusive for handbags, backpacks, and vehicles
 - Detectors, which are capable of 100% detection with 0% false positives
 - Detectors, which can detect all explosive materials and compounds, currently only about 7 explosive materials are detectable



Explosive Detection User Requirements

- Systems capable of identifying explosives from vapors
- A single system that can detect materials, residue and particles
- Systems that can operate in extreme temperature and humidity conditions
- Systems requiring very little calibration and maintenance



Explosive Detection User Requirements

- Systems that are rugged
- Systems requiring very little or easily obtainable power to lessen the need for batteries and replacements
- Systems that can start up almost immediately, with no warm up time required
- Self-purging systems
- Affordable systems
- Resistant to chemical agents



Decontamination Priorities

- Standards for
 - Decontamination Agents
 - Decontamination Solutions
 - Decontamination Procedures for Personnel
 - Decontamination Procedures for Buildings
 - Decontamination Procedures for Materials
 - Decontamination Procedures for Equipment



Decontamination Issues

- BNICE incidents will most probably produce mass casualties requiring mass decontamination tactics and strategies. This is evidenced by current attacks in the U.S. and abroad.
- First Responders, in field application, have limited decontamination resources available for incidents involving BNICE Weapons



Decontamination Issues

- Water is the recommended tool of choice for first responder application, especially for mass decontamination. (Verified through literature review.) The advantage of utilizing water for decontamination is availability, affordability, low-tech application, speed of application and limited maintenance requirements. Water is an acceptable means of decontamination for all the BNICE weapons. The obvious disadvantage in water usage involves cold weather operations.



Decontamination Issues

- Solution chemistry, solid-phase chemistry, gases and radiation technologies are currently available, but limited to use primarily in technical decontamination. In addition, the above are subject to substance-specific application.
- After decontamination, thresholds for determining “how clean is clean” are non-existent or nebulous at best.
- Field assessment technology is very limited.



Decontamination Needs

- Further research is needed to determine thresholds for decontamination requirements.
- A means for ascertaining threshold requirements in the field is needed. Any technological advances that increase the efficiency of personal or technical decontamination would be welcome.
- A means of determining cleanliness after the decontamination process is also needed.
- Development and improvements for future technologies should be the responsibility of industry, not the IAB.



Decontamination Needs

- Public Education on emergency procedures, such as the need to disrobe, so that there is less fear and concern by potential victims when the emergency responders want to start decontamination procedures.
- Self-decontamination kits in places of work and public assembly to facilitate decontamination within the 5-minute timeline while awaiting water decontamination. Self-decontamination kits would provide for modesty concerns in mass public decontamination in addition to encouraging victims remaining on scene as the result of clothing removal.
- Technology that possesses the advantages of water for decontamination, but does not cause or potentially cause hypothermia in cold weather environments.



Decontamination Recommendations

- Have DOE provide information on radiological decontamination procedures and policy.
 - Best process for radiological decontamination, dry, wet, water, soap and water?
 - Appropriate contact time needed for decontamination?
 - Possible interference of water in process of detecting residual contamination on a victim or responder
 - What is a safe level of decontamination?
 - What does DOE have for their Rad workers?

